

Vol. VIII. No. 5.  
25 Cents a Copy

**AUGUST, 1927**

# American Cinematographer

Published in  
Hollywood, California



By American Society  
of Cinematographers



*The Desert at Palm Springs, Calif. Reproduced from Location Library of  
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## **THIS MONTH:**

**Amateur Cinematography: A Professional's Notes  
for Amateurs—By Joseph A. Dubray, A.S.C. ; 16 M. M.  
Film in Golf Instruction—By Hamilton Riddell; A New  
Era in Lighting.**


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# American Cinematographer

*FOSTER GOSS, Editor and General Manager*

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An educational and instructive publication, espousing progress and art in motion picture photography.

Subscription: United States, \$3.00 a year; Canada, \$3.50 a year; foreign, \$4.00 a year; single copies 25c.

Published monthly by THE AMERICAN SOCIETY OF CINEMATOGRAPHERS, Inc.

Advertising rates on application.

1219-20-21-22 Guaranty Building, Hollywood, Calif.

Telephone GRanite 4274

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## The EDITOR'S LENS focused by FOSTER GOSS

### INTO THEIR OWN

¶ In this year of grace, 1927, the motion picture cameraman, or the cinematographer, as he is now most generally called, has entered into his own.

¶ Of all the servants of the cinema this unassuming artist-technician has been the most faithful and uncompaining.

¶ Ever ready to take orders like a good soldier, standing the gaff cheerfully even unto the risking of life and limb, on the job 100 per cent and delivering 100 per cent, the cinematographer has served through the years unheralded and unsung, yet the one of all the classes of studio workers able to stand at the bar of the industry as a "workman that needs not to be ashamed" and plead not guilty to the charge of WASTE.

¶ The camera being the sine qua non of the cinema, the fulcrum upon which the industry turns, the cameraman's work has been measured in footage. He has EARNED his stipend in the sweat of his brow and in the employment of his artistry. The cinematographer's work is tangible, there is no theory about it.

¶ Through the years he has sprung to his duties as a minute-man intent upon giving not only his best, but constantly reaching out for a better best. Nobody has told him what to do. Having his own idea of perfection before him, he has untiringly striven to achieve it. He thought, imagined, experimented, researched, kept an open mind, was never satisfied with results, and all the time he made no demands.

¶ His spirit of co-operation is well nigh the finest tradition (if the youthful cinema has any such thing), in all the history of the industry and never in a single instance has he "held up the set" through any temperamental strabismus of his own, and now in these days of chemicalization in the industry he arises to announce modestly, but earnestly, that he has served his apprenticeship, that he has earned his spurs, and that he is ready to take the place that he rightfully deserves—a seat in the councils of the

industry on equal terms with the representatives of the other departments of motion picture production.

¶ Not to parade his power does he assert his right to these things, although the organization of the cameramen, the A. S. C., is the most complete, the most cohesive, the most harmonious and both strategically and numerically the strongest in the industry, but he asserts his right for the most excellent of all reasons—that he is equipped to help in the economy of production and has a voice that can be raised in wisdom when knotty questions are in discussion.

¶ "Loyalty, Progress and Art," the motto of The American Society of Cinematographers, is not an empty slogan. Through the years since the first motion camera was cranked Loyalty has been the gonfalon of the cinematographer; Progress has been his guiding star; Art his passion, and this to the glory of the cinema. And yet through the years he has been inarticulate for the most part because his loyalty and modesty caused him to be simply taken for granted and his rightful seat at the council table occupied by some less worthy.

¶ That day has passed. By sheer force of artistry, intelligence and indefatigable labor the man at the camera crank has wrought his emancipation and with his forces coherent, harmonious, aspiring, and marshalled under a leadership at once intelligent and aggressive he expects the recognition he has so long looked for and so richly deserved.

¶ During the recent weeks the cinematographic forces of the motion picture industry, local and foreign, have rallied to the banner of the A. S. C., and by forces is meant first cameramen, second cameramen and still men, until the organization so nobly sustained and upheld through the years by the devoted Old Guard of pioneers, is able today to claim practically a 100 per cent membership. All eligible men are enrolled and others will be as they become eligible, so that now the men of the camera are able to speak with one voice, and that a megaphone of courage and confidence proclaiming that the CAMERAMASTERS OF THE WORLD have entered into their own and are marching on to new triumphs and to the enjoyment of their full share of the glory that is to be the future of our beloved and ever more wonderful cinema.

## Greater Sports Era Resulting from Pictures

Greater champions in every field of sport, as a result of the use of motion pictures in athletic training, are prophesied by Grantland Rice, authoritative sports writer, in the August Sports Number of *Amateur Movie Makers*, published by the *Amateur Cinema League*.

"Burns' wish has come true," Mr. Rice declares, "and today we not only see ourselves in films as others see us, but we see ourselves as unmistakably as others see us that we do not like it at all and set out at once to make ourselves over—and to play a better game of golf, or whatever our favorite sport may be."

Motion picture films, which reveal the secrets of the technique of famous athletes and even of whole teams, are now an indispensable part of modern coaching systems, according to Mr. Rice. Through slow motion, suspended animation and line analysis pictures, the elements of form and skill are today being demonstrated so simply and clearly that emulation of experts has become possible for everyone. The result has been an unparalleled advance in the standards of sport performance.

Slow motion pictures, in this connection, are now a familiar device. Suspended animation and line analysis are new developments, described in another article in this issue of *Amateur Movie Makers*. By suspended animations any particular position of the player, as, for instance, the position as which the racquet is held at the moment of service in tennis, can be closely observed, the frame showing the posture in question being duplicated fifteen or more times in the laboratory. Thus the player seems to stop at the crucial moment long enough for his form to be carefully studied, and then the action proceeds. In line analysis the stroke of the golf club, bat, or tennis racquet is traced on the film with a dotted line, which visualizes each stroke with marvelous clarity.

Not only are films of these types now being prepared for theatrical presentation, but schools, universities, athletic clubs and such national organizations as the United States Lawn Tennis Association are utilizing these methods in their sports training programs. Development of personal motion picture equipment and the availability of these films for home projection, have also made it possible for the ardent golfer to study his game in his own home under the tutelage of such experts as Bobby Jones, or, if he is a tennis fan, to receive the personal guidance of Rene Lacoste, Helen Wills or William Tilden, and similarly in all other sports to call on the world's finest teachers at will.

Through this home film development, Mr. Rice contends, "we may all get so well acquainted with our fumbles that we'll all be champions before long."

## News-Reels for Homes Are Latest Movie Quirk

A home movie news-reel, made up of films of the latest news events and issued twice monthly at the same time these events are being shown in the theatres, is the outstanding development of the month in the fast growing hobby of home movies. It will be announced in the August issue of *Amateur Movie Makers*, the magazine of the *Amateur Cinema League*.

"Highlights from the News" is the title of these bi-monthly releases. Issued the first week in July, the initial "Highlight" featured the Hawaiian Trans-Pacific Flight, Byrd's Atlantic attempt, and Columbia University's winning of the intercollegiate regatta at Poughkeepsie. The second July release is devoted to the Dempsey-Sharkey fight. Two editions of this "Highlight" were necessary, one for New York State, showing the actual fight pictures, and a second for national distribution to conform to interstate rulings on fight films.

All of the speed devices developed by the theatre news reels are being employed in this home news service. The Hawaiian flight pictures, for example, were rushed to New York by aeroplane and the home reels were being distributed at the same time the New York newspapers were printing the first photographs of the flight.

Genesis of this news reel service, according to *Amateur Movie Makers*, was in the covering of the Lindbergh flight for home movie fans. This brought about the discovery that there was a national demand for film news service, and also that the same speed in news gathering and distribution to the individual consumer could be economically developed, as for the customary theatre showings.

These news-reels are 100 feet in length and on the narrower width amateur film for use on home projectors. They are released by a national film company and are being distributed by dealers in photographic supplies.

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**A.** S. C. members are seldom available; when they are, they may be reached through the A. S. C. offices—GRanite 4274.

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# Chemical Composition of Light Carbons in Therapeutics

By Fred McBan

Continuing the discussion of lighting problems pertaining to motion pictures, Fred McBan of Carco goes into the technical detail of color carbons.

The electric arc and colored carbon has long been advocated for physical and mental ailments by scientists and physicians. The self same form of lighting could be aptly applied to lighting methods for motion picture photography.

As the painter would take the several pigments or colors and create a definite result, so is the cinematographer endeavoring to paint with light. But the necessary lighting mediums have been lacking in color values in the past.

The incandescent lamp seems to have fallen by the wayside, so to speak, by lacking depth and quality in color gradation. On the other hand, excellent results have been obtained by using the carbon arc with vari-colored carbons, especially on Du Pont Panchromatic and Agfa super speed film. Commendable at this time is the C. B. Dreyer method of resensitizing film stock applicable to all general lighting conditions.

The chemical composition of Therapeutic or light treatment carbons, follows in detail.

## *Therapeutic A Carbon*

This carbon contains rare earth fluoride. It gives a bluish white light. These lines extend from the infra red through the visible and ultra violet to approximately 2800 AU with scattered lines extending to wave lengths shorter than 2000.

For a given input of electric energy this arc is more nearly like sunlight than any other arc or any other light source. At large currents and high current densities such as used in the "High Intensity" lamps, the light produced is a very close reproduction of noon, June, California sunlight. The High Intensity arc to which we refer is used in the large searchlights operated by the Army and Navy, in the floodlights used to illuminate the large air mail fields and in the lamps used for projecting the pictures in large motion picture theatres.

## *Therapeutic B Carbon*

The Therapeutic B Carbon contains iron. The flame of this carbon is not particularly blue, but it gives a little light of a bluish tinge. The general color of the visible light is similar to that from Therapeutic A Carbons, but has a candle power of less than one-fourth than from the A Carbons for similar conditions of electrical current consumption.

The spectrum of light from this arc is qualitatively characterized by many lines that extend from the visible through the ultra violet to 2300 AU or shorter. Quantitatively it is comparatively weak in the visible part of the spectrum and very strong in the short ultra violet region. It gives much light in the region from 2300 to 3000 AU.

Light from this arc is in general more similar qualitatively to light from the quartz mercury arc which is widely used in light therapy. Quantitatively the amount of ultra

violet light from most Therapeutic B Carbons gives customarily larger electric energy consumption in the carbon arc.

This arc can be used when the object of treatment is to produce an erythema. Light from this arc is applicable to the general type of cases where the mercury arc is useful.

Light from Therapeutic B Carbons is particularly powerful in causing conjunctivitis, Klag Eye. Therefore every opportunity should be taken to impress on the mind of the user the necessity of protecting the eyes when using this carbon. Protection for the eyes is required when working with any therapeutic carbon. Therapeutic B requires special caution in its use.

## *Therapeutic C Carbon*

Therapeutic Carbon C is a "poly metallic" type of carbon. Several metals are to be found in the core. In this case the metals are iron, nickel and aluminum. Silicon is also present in this carbon.

The carbon is designed to produce the maximum quantity of ultra violet light. The carbons give ultra violet in large quantities as do some other—Therapeutic B and G particularly, but Therapeutic C gives a more even distribution of light through the entire ultra violet range than either of these. This carbon gives more nearly equal quantities of ultra violet throughout the physiologically active range than any other.

The same care to protect the eyes must be used when burning this carbon as is found necessary when burning the Therapeutic B Carbons.

## *Therapeutic D Carbon*

The Therapeutic D Carbon contains an alkali silicate as an arc supporter. The flame of this arc is nearly colorless or faintly violet. The spectrum consists of a few groups of lines on a continuous background. Most of the energy is in the red, infra red, and near ultra violet region. The ultra violet light is confined almost exclusively to the region of 3500 to 4200 AU.

It is difficult to predict just to what use these carbons can be applied. They are included in this list because they are being used by physicians with some clinical success. Some physicians demand them. We are not at present in a position to state that they are not the best thing to use in any given case. There is some short wave ultra violet in these arcs but the quantity is comparatively small.

## *Therapeutic E Carbon*

The Therapeutic E Carbon contains strontium. The flame of these carbons is red. The spectrum consists of lines in the red and in the extreme violet. The ultra violet is relatively weak in these carbons but large quantities of long wave red light are emitted.

These carbons should be useful where the object of treatment is to apply heat to underlying tissues while giving the surface a small dose of ultra violet light.

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## The Man Who Shoots Tom Mix

By ROBERT YOST



Dan B. Clark  
President A. S. C.

fore in almost as great danger as the star himself.

The greatest thrill which Mr. Clark ever got out of a picture was during the filming of "The Lone Star Ranger," when a scene of horses swimming was taken in a huge glass tank with the cameras and camera men under water. It was decided to shoot the scene before the tank was completed and the hatchways leading out of the tank, as a safety device, were not finished. Everything was perfectly satisfactory until one of the horses became frightened and began kicking. Luckily the glass was strong and did not break, but it was a hectic few minutes after Mr. Clark had communicated, by means of the air valves, with those above until the tank was hoisted up, as there were thousands of pounds of pressure and no way of getting out.

Mr. Clark claims that there is no vehicle on wheels on which he has not set up his camera, automobiles, trains, racing cars, engines and aeroplanes being a few of the modes of transportation on which he has placed his tripod and ground out thousands of feet of film. Even the cage of an aerial cable has been commandeered as a fitting spot from which to get the best results for the picture.

Another time in which those who watched the camera crew held their breath was during one of the recent Mix pictures when the cameras were placed on top of an old stage coach and the horses were actually running away. The coach, being a rickety old thing, the double-trees were not so secure as they had once been and in the middle of a perilous turn the horses broke away

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## Use of 16 M. M. Film In Golf Instruction

By HAMILTON RIDGEL

The camera never lies! With this axiom in mind Alex J. Morrison, professional golfer and author of the Morrison System of Golf, has made use of the 16 mm. motion picture equipment. Well known at the Hotel Ambassador, Los Angeles, where he is golf instructor, Morrison has long been an advocate of achieving simplicity and naturalness in playing this popular game. And he has great faith in the power of a photographic lens to depict the true form of the experienced golfer.

Realizing that the fundamentals of golf had not been arrived at, in perfect analysis, Morrison decided to use a motion picture camera for this purpose. Hence, as early as 1916, Morrison made one of the first slow motion pictures of golf. This film clearly depicted the various strokes of golf. However, being unable to stop this film during projection for a longer perusal of each individual picture, or "frame," it was necessary to have still picture enlargements made. Yet this method was costly and not entirely satisfactory.

With the advent of the 16 mm. amateur film the difficulties which Morrison had encountered with larger standard film were done away with. As is known, the 16 mm. film being non-inflammable, and there being provision made on most all of the amateur projectors, the film can be stopped, during projection, and the picture viewed as a still.

Morrison now uses an amateur camera and photographs a pupil while playing. It has been his experience that a pupil may not comprehend a correction as to his form. Morrison then runs the movie which he has taken of the player. He projects the film one "frame" at a time, each position of the player's body being clearly depicted. In this way the movie cleared up what a world of oral correction can not do.

Recently Morrison has made a one-reel subject of his system of golf with the co-operation of the William Hoesley Laboratories of Hollywood. This film contains natural, as well as slow motion, views of all golf strokes together with close-ups of the proper grip for each club, and also incorporates a golf exercise, a part of the Morrison system.

It is frequently Morrison's experience that a player, who has taken lessons from him, about to return to his home city, will inform Morrison that he fears he will not retain the golf instruction. Further, that he will have no means of checking up on his proficiency at the game. In such cases Morrison has available to the player a 16 mm. print, fully titled, of his system of golf. Thus the player has at his immediate command, in his own home, a graphic reminder of the instruction he has received from Morrison in person. Quite often the player has a 16 mm. amateur motion picture camera and pro-

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# In Camerafornia . . .

## and News Notes of the Month

Reginald E. Lyons, A. S. C., has just returned from Sonoma, Calif., where he filmed Buck Jones' latest picture, "Blood Will Tell." He is now working on the "Branded Sombree" with the same star, Buck Jones. The picture is being directed by Lambert Hillier.

Dev Jennings, A. S. C., is photographing Buster Keaton's next comedy feature for United Artist release. Charles Riesner is directing.

George Barnes, A. S. C., is photographing the Samuel Goldwyn production, "The Devil Dancer," at the De Mille Studio. Gilda Grey and Olive Brook are starred.

Nick Musuraca, A. S. C., is experiencing a busy month at the F. B. O. Studios where he is shooting "The Bandit's Son," starring Bob Steele, and is also in charge of the cinematography for Tom Tyler's next western feature, "The Gambler's Game," which Robert De Lacey is directing.

Ross Fisher, A. S. C., is photographing the next western feature of Ken Maynard for First National release, "Gun Gospel."

Arthur Edison, A. S. C., is chief cinematographer on Richard Barthelmess' latest picture, "The Drop Kick." Millard Webb is directing from a continuity by Winifred Dunn.

Glenn Mac Williams, A. S. C., is shooting a William Fox feature, "Pajamas," under the direction of J. E. Blystone.

George Schneiderman, A. S. C., is chief cinematographer on the next John Ford production for William Fox release.

Dan Clark, A. S. C., chief cinematographer for the Tom Mix unit at the William Fox Studios, is engaged in the cinematography for Mix's new production, "Silver Valley," which is being directed by Ben Stoloff.

George Meelan, A. S. C., is having a lively time photographing the latest kangaroo comedy, "Kangaroo's Kinoma," at the William Fox Studio.

John Arnold, A. S. C., recently completed the cinematography on the latest Lillian Gish production, "The Enemy," which was directed by Fred Niblo. With William Nigh directing, Arnold will next be occupied with

the camera work on Metro-Goldwyn-Mayer's film production of the popular musical success, "Rose Marie."

Frank B. Good, A. S. C., has just finished photographing "The Wise Wife" for the De Mille Studio, E. Mason Hopper directing. In the cast are Jacquelin Logan, Phyllis Haver, and Tom Moore.

E. Burton Sterne, A. S. C., has been assigned the Akreley camera work on Frank Strayer's next production for Paramount. The comedy team, Wallace Beery and Raymond Hatton, are starred. Harry Perry, A. S. C., is chief cinematographer on this picture, "We're Up in the Air Now," which is a sequel to the popular successes, "Behind the Front" and "We're in the Navy."

H. F. Kaenckamp, A. S. C., one of the foremost comedy cinematographers, has just finished shooting Larry Semon's latest two-reel comedy entitled "Dummies," to be released through Educational. This comedy is the first of a series of eight scheduled for this year.

Gaetano Gaudio, A. S. C., is finishing cinematographic work on Douglas Fairbanks' newest production, "The Gaucho," at the United Artist Studios.

Charles Rosher, A. S. C., long Mary Pickford's chief cinematographer, is busily engaged on her latest picture, "My Best Girl," now in the course of production at the United Artist Studios.

Henry Sharp, A. S. C., is photographing the Metro-Goldwyn-Mayer production, "Lovelorn," at the Culver City studio.

John Seitz, A. S. C., who was chief cinematographer on the special Metro-Goldwyn-Mayer production, "The Trail of '98," directed by Clarence Brown, is now photographing Marion Davies. Miss Davies' new picture is "The Fair Co-Ed" and it is being directed by Sam Wood from a story by Byron Morgan.

Edward J. Snyder, A. S. C., is shooting the latest Pathe serial. The Pathe company recently moved its production activities to the Metropolitan Studios.

Walter Lundin, A. S. C., has started camera work on Harold Lloyd's latest production, at the Metropolitan Studio. The continuity calls for many exteriors to be taken in the East.

# Amateur Cinematography

## A Professional's Notes for Amateurs

Part X  
By Jos. A. Dubray  
A. S. C.

## Lenses Powers and Image Formation

(Continued From Last Month)

In some cases, very rare indeed, a lens may be placed between two media of different composition, such for instance as AIR and WATER, AIR and OIL, etc.

If we consider the human eye as an optical instrument, we can easily conceive such a case.

The incident light, travels from an object through the first medium AIR, and is first refracted by the Cornea, which is the transparent membrane in front of the eyeball. It follows then, its allotted path through the aqueous humor, the Crystalline lens, the vitreous body, suffering refractions in accordance with their Index of refraction, and finally reaches the Retina, where the image of the external object is formed.

The first media in this case is AIR, the last media is the VITREOUS BODY, which are of different composition, hence of different density and possess therefore a different refractive index.

In such case, another set of Gaussian points and corresponding planes may be located and these new points and planes, are called the NODAL POINTS and PLANES of the lens or optical instrument.

In fact the principal points are superseded by the NODALS and, as the formers are but the OPTICAL CENTERS of the lens, we can express the formation of the Nodal points as follows:

"WHENEVER THE FIRST AND LAST MEDIA ARE DIFFERENT, THE OPTICAL CENTERS OF A LENS, ARE DISPLACED ALONG THE AXIS AND IN THE DIRECTION OF THE DENSER MEDIUM."

It is then evident that the NODAL POINTS have the same functions as the PRINCIPAL POINTS; and in the case in which the lens is placed between identical media, the Nodal Points COINCIDE with the Principal points, and they are indifferently referred to, as Nodals or Principals.

According to the Gauss theory, we have then three sets of points pertaining to each lens, namely:

The FOCAL POINTS.

The PRINCIPAL POINTS.

The NODAL POINTS.

These sets of points, fully determine the path of rays refracted by a lens and are therefore called the CARDINAL POINTS of the lens.

We have previously stated that the amount of refraction that rays of light undergo while passing through a lens, is subordinate to the refractive index of the material of which the lens is made, and the radii of

curvature of its bounding surfaces. Consequently the amount of refraction determines the position of the FOCAL POINTS and the FOCAL LENGTH of the lens.

It is evident then, that the degree of convergence to which parallel rays are forced when passing through a positive lens, INCREASES as the focal length diminishes, and if we call this amount of convergence the POWER of the lens, we find it to be INVERSELY PROPORTIONAL to the focal length of the lens.

The International congress of 1879, has adopted the name DIOPTRE (from the Greek word DIA meaning through and the root OP, to see) to indicate the POWER of a lens, i. e., its power to imprint a curvature on the front wave of light, when striking the first surface of refracting medium.

It is opportune to remark that the curvature imprinted upon the front wave of light as expressed in the preceding paragraph, must not be confused with the RADIUS OF CURVATURE of the faces of the lens.

If the lens is a positive one, the front wave will be forced by the lens to undergo a curvature of hollow shape and thus to converge to a focus. The DIOPTRE value will be in such case reckoned as positive and as such will be preceded by the sign + or by no sign at all at the will of the physicist.

Inversely if the lens is a negative one, the front wave will undergo a bulging curvature, and form a virtual focus. The DIOPTRE value in such case, will be reckoned as NEGATIVE and always preceded by the sign —.

In order to establish a uniform numerical value of the DIOPTRE, a lens with a focal length of ONE METER, is taken as unit.

The reciprocal of the focal length, gives the number which indicates its POWER.

Thus:—The unit lens whose focal length is One meter, has a power of

$$\frac{1}{1} = 1 \text{ DIOPTRIES}$$

A lens having a focal length of meters 0.50 has a POWER of

$$\frac{1}{0.50} = 2 \text{ DIOPTRIES}$$

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## The Cinematographer As a Prophet...

The American Cinematographer has made good as a prophet as the following editorial from the Cinematographer of November 1, 1921, attests. The Pacific Era is here and the great city is building and Hollywood sits serenely in the midst sure of a marvelous destiny:

"To a cinematographer standing on the summit of Mount Lowe and looking down upon 'the cities of the plain' the whole marvelous panorama suggests nothing so much as a motion picture of unspeakable beauty. The picture does not really move, but the constant shifting of the observer's vision from mountain peak to canyon, to valley, to hill, to sea, to sky, to cloudbank, to rugged trail, to valley mist, to the islands of the sea and back to the majesty of the mountains, every prospect softened by the magic touch of nature's color, produces the effect of motion and the whole scene seems to be alive.

"Standing at such a point of vantage it is not difficult to project the vision into the future and see spread out there below a city reaching from the Santa Monica Mountains to Sierra Madre, from Balboa far beyond Burbank and from the Beverly Hills to Santa Ana—a city mightier than any ever built by man—with as many millions as London and New York combined! And why not? 'Westward the course of empire takes its way' constantly, and, already, West is East.

"Is the movement to California and the West Coast simply an agora of some millions of people looking for soft living, or is it a very definite part of the plan of Divine Providence in the evolution of the human race?

"The world war ends and suddenly all nations turn their eyes toward the Pacific. Japan, already a child of the Pacific, suddenly looms as a tremendous power. For good or evil? That is what all nations are asking. Why? Because Japan in her spirit of Bushido (the Soul of Japan), asserts herself as the arbiter of her own destiny and proclaims her power and intention to fulfill that destiny. This takes concrete form in sundry strategic movements looking indubitably to the dominance of the Far East—China, Siberia and the islands of the sea which, translated into political import, means dominating the Pacific.

"We see Great Britain hastening to concentrate a gigantic fleet at Singapore; Australia openly disapproves of Japan's aspirations; China, awake, hides her time; and the United States, with the Philippines on her hands, watches anxiously, while professional war-makers look for an opportunity to precipitate the struggle. And why all this shifting of men on the international chess board? Is what we see with our eyes all there is to these great movements of nations?

"It is worth remark, in view of these things, that students, teachers and writers of the so-called Theosophical subjects have interesting light to throw upon these phenomena, the outstanding headlands of which are:

1. That a new race is in the process of building here in Southern California.
2. That a new continent is in process of forming in the Pacific.

3. That the future great activities of the world are to find their theatre on the new continent and the coasts adjacent to it.

"It requires deep research into the strange and recondite books of the Theosophical religio-science-philosophy to gain an understanding of the Great Plan of evolution of the Logos of our solar system; of the building of the root races and their differentiation into subraces; of the rise and fall of nations and the growth, the flourishing and the breaking up of continents.

"Western science now knows of the existence of the long departed continent of Lemuria and of the more recently existing continent of Atlantis. If these two great continents with their mighty civilizations came and went, why shall not others come and old ones go and why may not this great movement toward the Pacific be in truth the outward, visible sign of the working of a great cosmic law—a world movement according to the Great Plan of Divine Law?

"This same source of information tells us that the dominating race of the present day is the Teutonic (not in any sense the German nationality), including among others all the English-speaking peoples, and that this race is the Fifth Sub Race of the Fifth Root Race; that the next race to be developed is the Sixth Sub Race, the pioneers of which are beginning to appear among the highest types of children of California; and that the glories of all present and former civilizations will pale before the glory of this new type of humanity in the ages to come.

"Of the Japanese we are told that they have a mighty destiny to fulfill which in no way interferes with nor detracts from the glory of any other peoples.

"The Theosophical message is, therefore, fraught with glad tidings of great joy to all peoples and especially to the people of Southern California and the West Coast. Let the new continent arise and the new race come forth to the glory of the God of races and, this time, the Divine panorama will not be lost to posterity, for our cinematographer of Mount Lowe will be at his tripod ready to record the march of events the like of which in time past perished because there were no cinematographers."

## Another Creco Innovation

Make use of your SHORT ENDS OF FILM, don't throw them away.

The one hundred per cent efficiency of Kamra for fool proofing locations, settings, etc., etc., will pay for the original cost many times plus.

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Remember, Kamra will be ready for distribution September first. The price is twenty-seven fifty (\$27.50).

## Shooting Stills In The Sky

(This interesting article, submitted without identification, is published anonymously until such time as our unknown contributor is discovered.)

THE stumbling block for the aerial photographer lies principally in the failure of the shutter and plate magazine to operate properly. Both have been mechanically perfected, to the utmost, yet under changing conditions of an aerial voyage, they give rise to faulty operation whose cause is not readily discerned.

The most frequent failure, very common during the cold days of the year, is the non-operating of the roller-blind shutter of the curtain slide. This is due to the coldness of high altitudes. In winter at an altitude of 13,000 to 20,000 feet, the temperature may be as low as 45° to 60° F. Under such conditions the working of the mechanical parts of the apparatus are greatly taxed and the failure of the shutter is a direct result of the cold. However, the cause is not, as sometimes assumed, the stiffening of the roller, but simply a freezing of the oil or fat with which the shutter is lubricated. For instance, I noticed in one camera that even the shutter after descent did not work, and on taking the apparatus apart I found that the mechanism was covered with a yellow mass as hard as stone, which after thawing out, proved to be a lubricating fat which let the shutter operate to perfection. Shutters operating perfectly on the ground fail in the air, and when warmer atmospheres are reached begin to perform again. Experiments with thin watch oil as lubricant lead to the same result, as nearly every lubricating oil or fat will freeze at these temperatures.

The best way to overcome this difficulty is to clean the shutter mechanism of all traces of oil and fat and then lubricate the frictional surfaces with a very thin layer of glycerine. Such shutters will operate even at the lowest temperatures. It is quite useless to attempt operation of the shutter simply by increasing the tension of the spring—this is one of the commonest means used by the aviator in his desperate attempt to make the shutter work. The springs are delicate and the increased tension of the springs will only wear them out prematurely, and cause irregular running of the shutter which naturally will produce stripes on the negative.

The second failure is with the plate holder and the plate magazine. With the rapidity with which a picture must be taken from the flying aeroplane, it occurs frequently that an operation is forgotten and the plate joins, the amateur then uses force and the plate holder drops or the plate breaks. The modern plate magazines have been made so simple that it appears ever to be the fault of the photographer if something happens. Usually it is not the fault of the aviator photographer but of the assistant who loaded the camera. Many plates are not manufactured to the same thickness; some are thicker, some are thinner. If you force a thick plate in the thin plate holder it will break at the first change and prevent

## Difficulties In Aerial Photography

successful operation of the magazine; therefore, fill the plate holders only with plates which fit easily. In changing plates try never to force the issue by mere strength, for you are dealing with a delicate instrument, like a compass and altitude indicator which refuse to serve when treated roughly.

Lastly, a few pointers regarding the pictures themselves. We frequently see pictures from low altitudes which are not clear and sharp. This brings up the question of the influence of the flying speed on the sharpness of the picture, which is a simple problem of physics. The indistinctness of the picture will become greater the lower the plane travels and the larger the focus of the camera. Hence, to determine the distinctness of the picture one must consider height of the aeroplane and focus of the objective.

The measure for distinctness or indistinctness of the picture is the path which a point of the object travels during the time of exposure upon the plate. In order that a picture appear sharp this path cannot exceed a certain limit. As limit, we assume a length of 0.004 inches.

By taking this limiting value for the measure for sharpness and assuming an aeroplane traveling with a speed of 95 miles per hour, we come to the following table of necessary exposures. This table is interesting in many respects; we learn, for instance, that it is impossible to take sharp pictures, even under the best light conditions, from flying heights of 220-1100 yards by using long focus lenses of 20 to 50 inches. On the other hand the table likewise shows that from extreme heights with short focal objectives the exposures can be made much longer than is usually assumed (1/200 sec.) and still sharp pictures be obtained, provided other contrary influences, as motor-vibrations, are eliminated.

In using the table it must be remembered that the given exposures are calculated for the longest time permissible and if the light conditions are favorable, naturally, a shorter exposure than that given in the table should be attempted.

### Exposure Table

Longest exposure permissible for obtaining sharp pictures from an aeroplane flying with a speed of 95 miles per hour.

Height	10 in.	12 in.	20 in.	28 in.	39 in.	47 in.
feet	lens	lens	lens	lens	lens	lens
656	1/525	1/625	1/1050	1/1500	1/2100	1/2500
985	1/350	1/425	1/700	1/1000	1/1400	1/1700
1640	1/200	1/250	1/425	1/600	1/850	1/1000
1196	1/150	1/175	1/300	1/425	1/600	1/700
3280	1/100	1/125	1/200	1/300	1/425	1/500
4920	1/70	1/85	1/140	1/200	1/275	1/325
6561	1/50	1/65	1/100	1/150	1/200	1/250
8201	1/40	1/50	1/85	1/125	1/175	1/200
9842	1/35	1/45	1/70	1/100	1/150	1/175
13123	1/25	1/30	1/50	1/75	1/100	1/125
16404	1/20	1/25	1/40	1/60	1/85	1/100

(Concluded on Page 21)

# HARRY LACHMAN

General Production Manager

OF

## REX INGRAM

PRODUCTIONS, INC.

Says:

"When, with five cameras working on many scenes of his new Metro-Goldwyn picture, 'The Garden of Allah,' featuring Alice Terry and Ivan Petrovich, Rex Ingram picked EYEMO shots out of the rushes for special commendation and eventually incorporated many of them in the final negative, it meant they were proving their worth in competition of the keenest sort."

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Hand Standard  
CAMERA



Enlargement of a scene from the negative of Rex Ingram's "The Garden of Allah." This shot, taken by Harry Lachman with his EYEMO, proved so superior in results that Mr. Ingram incorporated it (and many others) in the final negative.

CONTINUING his appraisal of the Bell & Howell Eyemo Camera, Mr. Lachman says: "With a thousand details of production to handle, I added hand cameras to the many other tasks. Results were astonishingly successful. Many of my Eyemo shots saved days of re-takes—a tremendously important fact when you consider daily production costs of such stupendous productions as the 'Garden of Allah!'"

"Inspired by the success of EYEMO I decided to use it in filming a wholly new idea of my own in comic travelogues to be known as 'Traveloughs.' The scenario

may be said to have been written with one hand, with an EYEMO dangling from a strap attached to the other waiting to film it."

The above scene is from one of Lachman's "Traveloughs." It shows his new star, Micky Powell, doing a "hand-axe" stunt with both Bell & Howell Pioneer Standard and EYEMO catching the action.

Results count most. EYEMO delivers, as the above statements prove. Put your faith in a Bell & Howell Camera and you'll never be disappointed. Write for information on either the Pioneer Standard or EYEMO.



With EYEMO you can "follow focus" or "dual track" with camera in operation. Fourteen lenses are interchangeable to any professional requirement. Accurately matched viewfinder lenses coordinate viewfinder with camera lens. With Eyemo you can vary the speed, either from 14 exposures per second to 5, or from 14 to 32 with the Double-Speed EYEMO.

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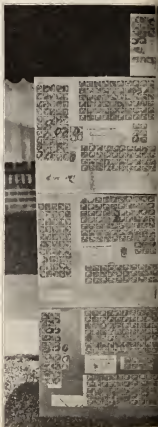
The demand among Hollywood Studios for **DUPONT** Orthochromatic and Panchromatic raw stock was so pressing in July that an emergency supply had to be forwarded on telegraphic advices via United States Air Mail. This constituted the Largest Commercial Shipment of Any Commodity Ever Made by Air Mail.



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There must be a reason for the extraordinary growth in the demand for Raw Film and this **DUPONT** reason technically stated is that this film possesses an extreme latitude combined with speed, fineness of grain, high sensitivity and better color separation, which combination of qualities produces incomparable negatives.



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## THE MAN WHO SHOOTS TOM MIX

(Continued from Page 8)

and ran as fast as they could tear down the road. The coach careened into the bank, but had it chosen to turn to the other side there was nothing but a five hundred foot drop between the camera men, cameras and eternity.

Having an infuriated cougar jump onto the camera platform is another of the minor incidents which Mr. Clark recalls. It was during the filming of "The Trouble Shooter." The cougar became enraged and made a flying leap for the cameras. The savage animal stood rigid for a moment and then his attention was diverted and he jumped down again. Cameraman Clark likewise stood perfectly rigid and had he moved, it is highly probable that the animal would have attached himself to the camera crew with astonishing rapidity.

Having a troop of bucking broncos make a bee-line for the cameras and get all mixed up in them is all part of Mr. Clark's day's work. The camera man and his assistants simply pick the cameras and themselves out of the debris, set up in another spot and go on shooting the scene.

Luck plays a big part in all of the work done on Mix pictures. Very often when some particularly tricky scene is under way and a certain angle must be used, the scene will be completed before anything untoward happens. For instance, at one time, Mr. Mix coming down an incline of forty-five degrees on "Tony" was the action. Cameras were placed on a small incline railway and were grinding as the platform was drawn down the hill by a cable. Mr. Clark suddenly realized that the super-structure of the platform was slipping, so the camera crew held the cameras on with their hands until the bottom of the hill was reached. Just as the last foot of film was completed the platform slipped for good and the camera crew took a tumble into space, but luck was with them and they dropped into soft dirt. It so happens that any number of things of like nature have occurred which make the Mix company positive that there is no need to worry about a film being spoiled. Up to the present there have been many narrow escapes but no disasters.

"There is one big chance that I take almost every day in the year," asserts Mr. Clark, "and that is boxing with Tom." The two men box each night after the day's work is over and the result is usually in favor of Tom, but Dan is determined that some day he will get in a punch that will make him the champion of the Fox lot.

Incidentally, Mr. Clark has to his credit forty-eight Mix pictures taken since January, 1921, a record not equalled by any camera man engaged in motion picture work, and since joining the Mix company he has not indulged in a vacation. Often one picture is begun the day after the previous one is finished. That is also a record of which any camera man may well be proud.



## AMATEUR CINEMATOGRAPHY

(Continued from Page 10)

And a lens having a focal length of 2 meters, has a POWER of

$$\frac{1}{2} = 0.5 \text{ DIOPTRIES}$$

Expressing the Dioptric value as a formula, we have

$$D = \frac{1}{f \text{ (in meters)}}$$

where D indicates Dioptry; and  $f$  the focal length of the lens.

As the meter is equal to 39.37 inches, if the focal length of the lens is given in inches, we must divide 39.37 by the given focal length thus

$$D = \frac{39.37}{f \text{ (in inches)}}$$

As an example let us suppose a lens having a focal length of 2 inches.

We can find its POWER, by the Formula

$$D = \frac{39.37}{2} = 19.69 \text{ DIOPTRIES}$$

or, as two inches equal meters 0.05080, by the Formula

$$D = \frac{1}{0.05080} = 19.69 \text{ DIOPTRIES}$$

The formulae used for finding the position of the Cardinal Points of a lens, require a too lengthy explanation for the space allotted to these articles.

We will therefore give the formulae, referring the reader to more complete works on the subject, for their thorough investigation.

Let us suppose a thick lens as in Fig 23



of which the value  $r_1$ ,  $r_2$ ,  $d$  and  $n$ , are known.

The values  $r_1$ ,  $r_2$  and  $d$ , may be easily obtained by actual measurements and the value  $n$  is always given by the manufacturer of the lens.

In such a lens,

$$\text{The distance } V_1 E' = \frac{r_2 d}{n(r_1 + r_2 - d) + d}$$

(Continued on Page 18)

## Progress of Photography, 1927

# MEYER KINO-PLASMAT *f*-1.5

This is the latest contribution to Photography by the famous Dr. Rudolph, creator of the Tessar and Protar.

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A LENS FOR EVERY PURPOSE

Victor Milner, A. S. C., is in charge of photography for Ernst Janning's next picture for Paramount. The second American picture which Jannings is now making is entitled "Hitting For Heaven," and is being directed by Maurice Stiller.

\* \* \*

John Boyle, A. S. C., is photographing Mack Sennett's special feature, "The Romance of a Bathing Girl" and is directed by Alf Goulding. Johnny Burke, of vaudeville fame, is in the cast.

\* \* \*

Joseph Brotherton, A. S. C., is shooting a Universal picture with Jack Daugherty under the title of "Haunted Island." Robert Hill is directing.

\* \* \*

Edward Du Par, A. S. C., is chief cinematographer for the special Warner Brothers production, "The Jazz Singer." Alan Cranland is directing, with Al Jolson as the star. May McAvoy is featured.

\* \* \*

Conrad Wells, A. S. C., is busily engaged shooting two Warner Brothers productions. The first is "A Sailor Sweetheart" with Louise Fazenda, and directed by Lloyd Bacon. The second production stars George Jessel as "Sailor Izzy Murphy," a sequel to "Private Izzy Murphy."

## Film's bigger and better future—

**W**HAT the future holds in store for moving pictures in general—and photography in particular—no one can tell. But all signs point to a continuation of healthy progress.

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$$\begin{aligned} \text{The distance } E V_2 &= \frac{r_2 d}{n(r_1 + r_2 - d) + d} \\ \text{The distance } E E' &= \frac{d(r_1 + r_2 - d)(n-1)}{n(r_1 + r_2 - d) + d} \end{aligned}$$

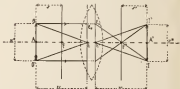
and the  $f$  value, or true Focal length, will be given by the formula,

$$f = \frac{n}{n-1} \left( \frac{r_1 r_2}{n(r_1 + r_2 - d) + d} \right)$$

These formulae, are applicable to all lenses, but it must be borne in mind that the radii of curvature of convex surfaces are to be reckoned as POSITIVE, while those of concave surfaces must be reckoned as NEGATIVE.

### IMAGE FORMATION

Let us consider now, a positive lens, characterized by its Gaussian points as in Fig. 24.



And let us place an object  $O O'$  at a distance from the first Principal plane, equal to the double of the focal distance  $F E$ .

Taking the point  $O$  as a center of disturbance, we can consider a number of rays of light emitted by it, which strike the first surface of the lens. Among these rays, let us select two: First, the ray that emanates from  $O$  parallel to the Axis and is incident to  $E_1$  and secondly, the ray that joins the point  $O$  with the Principal point  $E$ .

According to the Gaussian theory, the ray  $O E_1$  will emerge from the lens as if coming from the point  $E_2$  of the Second principal plane, and cross the Axis at the Focal point  $F'$ .

The ray  $O E$  will emerge from the lens as if proceeding from the point  $E'$ , in a direction parallel to  $O E$ . The two refracted rays will then meet at the point  $I$ .

If the height  $E E_1$  is sufficiently small (the angle  $E_1 E' E'$  should not exceed  $6^\circ$ ), we will find that all rays emanated from  $O$  and incident to the first surface of the lens will, after refraction, meet at the point  $I$  which consequently is the conjugate of  $O$ .

An IMAGE of the point  $O$  will therefore be formed at  $I$ . This image can be collected on a screen placed at  $I$  or can be seen by the unaided eye if it is placed on the path of the rays emanated from  $I$ .

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The same construction may be followed for the object point O' and its conjugate will be found at I' and similarly ALL POINTS of the object plane will have their conjugate in the Image plane, thus a perfect image of O O' may be collected on a screen placed at I I'.

This image will be REAL and INVERTED as it is the case with an image formed by a pin-hole aperture (see April issue American Cinematographer), but with the great advantage that the pin-hole is replaced by a much greater aperture, which admits a greater number of rays for each point of the object, concurring to form its image, which in turn considerably increase the luminosity of the image itself.

Let us, now, designate the distances that can be seen in Fig. 24, by symbols, according to the convention of symbols and signs.

The distance A E, or distance from the object to the first principal point of the lens is always designated by the letter U.

The distance E' A', or distance of Image from second principal point, is always designated by the letter F.

The height of the object O O' is designated by U\* and the height of the image by F\*.

The ratio of the size of the image to the size of the object, is equal to the ratio of the distance of image from the lens to the distance of the object from the lens, or

$$\frac{F^*}{U^*} = \frac{F}{U}$$

this ratio gives the magnification of the image, and is always designated by the letter M.

We thus obtain the formula:

$$M = \frac{F}{U}$$

In Fig. 24 in which the object is placed at a distance from the lens equal to the double of the focal length, the values U and F are equal and therefore their ratio

$\frac{F}{U}$  equals 1 meaning that the image is of equal size as the U

object. In such a case, the object and image points A and A' and the corresponding image planes are called symmetrical.

If the object is placed at a distance from E, greater than double the focal length of the lens the ratio  $\frac{F}{U}$  is less than 1, meaning, in such a case, a MINIFICATION of the size of the image in respect to the size of the object, takes place.

Between the points A and F the ratio  $\frac{F}{U}$  is greater than unity, meaning a MAGNIFICATION of the image in respect to the object.

If the object is placed exactly in the focal plane, NO IMAGE will be formed, because all rays emanated by the

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object will, after refraction, emerge from the lens parallel to the Axis.

Finally if the object is placed between the focal point and the lens, only virtual conjugate foci will be formed see July issue of The American Cinematographer), and therefore a VIRTUAL image will be obtained, ERECT AND LARGER THAN THE OBJECT. This is the case of all common magnifying glasses.

From the foregoing, we can deduce that "FOR A GIVEN OBJECT DISTANCE THE IMAGE, DISTANCE AND THEREFORE THE M VALUE IS DETERMINED BY THE FOCAL LENGTH."

Thus:

$$\frac{1}{f} = \frac{1}{U} + \frac{1}{V}$$

and if we call  $S$  and  $S'$  (Fig. 24) the extra focal distances, or the distances from object to  $F$  and from Image to  $F'$  respectively, we have

$$M = \frac{V}{U}$$

$$M = \frac{f}{S'}$$

$$M = \frac{f}{S}$$

$$M = \frac{f}{S}$$

(To be continued next month)

## Enlarging Camera Shown

A new departure to enlarge greatly the field covered by the motion picture camera has been presented to the Academy of Sciences in Paris.

The device was invented by Henri Chretien, of the Institute of Optics. It would extend the field of the camera either horizontally or vertically. The same attachment is used on a projection machine for the showing of pictures.—The Exhibitor Trade Journal.

Alfred Galks, A. S. C., is photographing Paramount's "Heaven Help the Working Girl," which features Esther Ralston and is directed by Eddie Sutherland.

King Gray, A. S. C., is at San Diego for location exteriors for a William Fox production.

— AKELEY SPECIALIST —

IRA B. HOKE

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## SHOOTING STILLS IN THE SKY

(Continued from Page 12)

When photographing with a lens of 28 inch focal length below a height of 1607 feet, objects are indistinct and lack sharpness while the same holds true for a camera with a lens of 10 inch focal length below an altitude of 225 feet. Only from these heights and upward is it possible to obtain clear sharp pictures.

The shutter speed, therefore, has even from a stationary aeroplane (head wind) a certain lower limit. The vibrations of the motor are transmitted to the photographer and hence to the camera. They differ in different makes of aeroplanes and depend upon the construction of the motor and its position. They prevent the camera from absolute rest at the moment of exposure and the shutter must work with great speed to eliminate these vibrations, otherwise a distorted picture results.

**Summarizing**—The aerial photographer should follow these rules:

**BEFORE THE EXPOSURE**—Make sure that everything is in working order. Take off objective cover and see that no oil droplets are on the lens, adjust diaphragm, put on the light filter tightly, wind up the shutter, drop first plate in plate holder, stop the barograph and make note of the altitude.

**DURING FOCUSING**—See that no part of the aeroplane comes into the picture (wires and wings).

**ON EXPOSURE**—Hold camera freely in your hands, do not rest the arms on parts of the aeroplane to avoid vibrations, release the shutter slowly and not impulsively as otherwise the camera may move.

## Craze for Home Movies Growing

Opinions are varied over the effect which the public's craze for amateur picture-making will have on regular exhibition.

Some are of the opinion that this constant tinkering with motion picture-making will quicken the interest of the present theater-going public and attract new patrons to theaters.

Others state that the vogue will tend to keep theaters going at home projecting their own pictures rather than attending shows. Both proponents and opponents of the movement, however, are in agreement that here is a situation which the exhibitor will have to contend with in the next three or four years and, probably, in less time than that.

Eastman Kodak has developed a library composed of dramatic features which have been reduced down from standard to narrow gauge. These pictures are designed for home projection and can be shown through the Kodascope, the Eastman projectors sold either with or without the Cine Kodak, which equipment takes motion pictures. In New York there are several libraries whereas the public may either buy or lease various types of entertainment pictures.—Film Daily.

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**American Cinematographer**

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Hollywood, California

## A NEW ERA IN LIGHTING

A special telegram to the "Film Daily" from Los Angeles recently carried this story:

"Engineers from the General Electric Company at Schenectady are in Los Angeles to confer with John Arnold, cameraman, and Lou Kalb, chief engineer at M-G-M, on the 'Arnold lights,' a new development of incandescent bulbs used in place of the old-time arcs.

"Arnold has used the incandescent lights in two productions."

Mr. Arnold is one of the charter members of the A. S. C. and has long experimented with incandescent lights for use on the set. His success is in line with the experience of other members of the A. S. C. who have for more than three years been researching on this subject.

One of the first authentic records of the use of incandescent lights preserved in the archives of the A. S. C. is contained in an article written by Victor Milner and published in "The American Cinematographer" of date, March, 1925, one excerpt from which follows. Writes Mr. Milner:

"When I arrived the lights were practically all set for the long shot. They were of the latest type B. E. actinic photographic equipment, similar to the ordinary 'Mazda' lamps used in the households since years ago. It was these lamps that eliminated our former enemy, excessive heat, for they gave a 'cold light' with never a suggestion of carbon dust or klieg eyes. Each lamp was equipped with damper arrangements. True, they were of terrific candle power, if measured by the standards of the first quarter of the twentieth century, but they were easily controlled by a single operator stationed near the camera. Breakage was impossible as the lamps were slung in a cradle-suspension contrivance. Gone were the cables which for endless years had made us walk as if we treaded on the proverbial eggs; gone were the spots with cracked condensers which had brought forth far too many oaths because they had given spots everywhere except desired."

Other members of the A. S. C. who have experimented with great success in the use of the incandescent globes are President Daniel B. Clark, George Barnes, Alfred Gilks, Arthur Edson, Ned Van Buren and probably many others who have not yet reported. But enough has been done to establish the fact beyond question that the incandescent lamp has come to the studios to stay and a new era of lighting pictures is here at last.

The illuminating engineers have also turned their talents in this direction and are designing and building the incandescent lights for studio use.

Once more the cinematographer has scored as a pioneer. Once more on his own initiative he has discovered a better, cheaper, more efficient way to do the work in his department of cinema production—an improvement long needed and long hoped for.

In the September issue of "The American Cinema-

tographer" this subject will be treated in detail by a symposium of experts and it will be one of the most interesting articles ever published in this magazine because of its almost revolutionary character.

This much may be said here, however—it is already certain that the new method of lighting will bring about a saving of not less than 25 to 75 per cent over the old, a tremendous item in the cost sheet of a picture.

## Attention Members A. S. C.

Because of the unprecedented rush of work in connection with the admission and installation of new members it has been impossible to prepare a complete roster of membership of the A. S. C. in time for this, the August issue. The September issue will contain a list complete up to the date of going to press which will be before the fifteenth.

## Announcement

The American Cinematographer begs the indulgence of its readers this month because of the delay in issuing the August edition, which was due to the insurmountable volume of extra work thrown upon the executive staff attendant upon the tremendous rush of applicants for membership. The amazing growth of the A. S. C., due to the recognition of its position as the logical head of the cinematographic department of the industry, will eventuate in a bigger and better AMERICAN CINEMATOGRAPHER, and henceforth, the magazine will be issued on time. Thank you.

## Chemical Composition of Light Carbons in Therapeutics

(Continued from Page 7)

### *Therapeutic F Carbon*

The Therapeutic F Carbon contains tungsten. The spectrum of the somewhat bluish flame of these carbons consists of many lines thru the entire ultra violet region. The energy emitted by such arc seems in at least some cases to be similar to that from the D Carbons. They are demanded by some physicians who are using this type of carbon with some clinical success.

### *Therapeutic G Carbon*

The Therapeutic G Carbon contains nickel. The light from these carbons has a slight greenish tinge. The spectrum consists of many lines through the visible and ultra violet similar in general nature to the B Carbons but the energy emitted is different. Some very strong lines at 2295 AU and a very strong band at 2900 AU to 3500 AU are the chief characteristics.

### *Therapeutic H Carbon*

The Therapeutic H Carbon contains calcium fluoride. The light from this carbon is a mixture of red and green which gives the eye the impression that the light is yellow. The spectrum consists of broad bands in the red and green region which emits most of the energy. The rest of the spectrum is decidedly discontinuous. The violet percentage is comparatively small.

These carbons are good sources of visible and infra red energy combined with a small amount of ultra violet. They are being used by some physicians.

### *Therapeutic K Carbon*

Therapeutic Carbon K is a carbon coated with cobalt. This carbon gives a spectrum with about as many lines in the ultra violet region as are found in the spectrum of B or G Carbons. They are found in different parts of the spectrum and their energy distribution is considerably different. In the light from these carbons considerable energy of wave lengths from 3100 to 3500 AU is found. The chief physiologically active part of this light is in the extreme short wave length region. A higher proportion of the ultra violet light is of wave lengths below 2900 AU than for any of the other carbons. It is therefore more nearly like the Kromeyer water cooled mercury arc than any other carbon arc so far developed. These very short ultra violet waves are quite destructive in their action. Probably this carbon should be used with all the precautions and only in types of cases similar to those found suitable for employing the water cooling mercury arc.

A recent distinguished visitor to the rooms of the A. S. C. was Mr. Otto B. Becker, cinematographer of U. F. A., the greatest of the European studios. Mr. Becker is already a Hollywood booster and an enthusiastic admirer of American motion pictures.

## FOR SALE

I have for sale the following apparatus:

### 1 Andre De Brie Camera

For either slow or standard speed motion pictures, sold by Motion Picture Apparatus Co. of New York to Mr. Aas Cassidy, who financed Mr. Williamson on his trip a few years ago to the Bahama Islands, where there was filmed the "Wonders of the Sea."

This camera bears No. 9 stamped on the front of the casing and is in absolutely perfect operative condition, complete with two double magazines for 400 ft. film, in leather carrying case.

It is equipped with lens by E. Krauss, Paris, No. 125409, Tamar 103.5; F-50 Bts.

The camera is equipped with the usual finder, 2 spirit levels and 400 ft. film register in 5-ft. scale to each division.

It is in perfectly operative condition with two leather carrying cases and can be inspected and tested by appointment at this address.

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## Use of 16 M. M. Film in Golf Instruction

(Continued from Page 8)

jector. To such players Morrison advises them to be photographed executing the varied exercises and strokes. Not only can the player thereby supply himself with a perfect diagnosis of his game, he can also compare this film with Morrison's, and thus eradicate his apparent mistakes.

It is Morrison's conviction that the 16 m.m. amateur motion picture outfits are a boon to all golfers. He has great faith in the camera for its clear, graphic, and truthful portrayal of golf, and deems it an invaluable aid to better golf.

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WILL PAY you in touch with buyer for Bell & Howell cameras and equipment. Please or write to A. E. C., 1222 Guaranty Bldg., Glendale 4234, Hollywood, California.

BELL & HOWELL or Mitchell Cameras (with), Projection Printer, Cine Lens, (Shmidt) Lens Processing Machine, Mating Reometer, Pulishing Machine, State price, Equipment. Fred Jeffery, 6185 Street, Rose Park, South Australia.

WANTED—Used movie camera. Old model considered. State condition, make, price, etc. Albert R. Roy, Sandhill, Kansas. State delivery.

AKELLY CAMERA—Phone Perry Evans, DUNKIRK 3439, or care A. E. C., 1222 Guaranty Bldg., Hollywood.

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LATE MODEL Bell & Howell Camera, 170-degree shutter, side and truck, 4 magnifying and carrying case; a lens; 1 line outfit tripod and finder. Address Box 5, American Cinematographer.

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highly enthused over the way you photo-  
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the author of this opus, by accurately  
depicting the delicate moods, the fine  
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which we strove.

You saved us, the producers, a  
lot of money. Out of that magic box of  
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